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(54) Insulating device

(57) A device for reducing heat losses and/or draughts around windows and/or doors, comprises a roller carrying a sheet of transparent or translucent flexible film material guided by retention and/or sealing means (6, 7) adjacent or locatable adjacent the edges of the film material. The sealing means may comprise pile material. The roller and sealing means may be housed in a box frame.

To avoid contact between adjacent film layers it may be wound through coils surrounding the roller.

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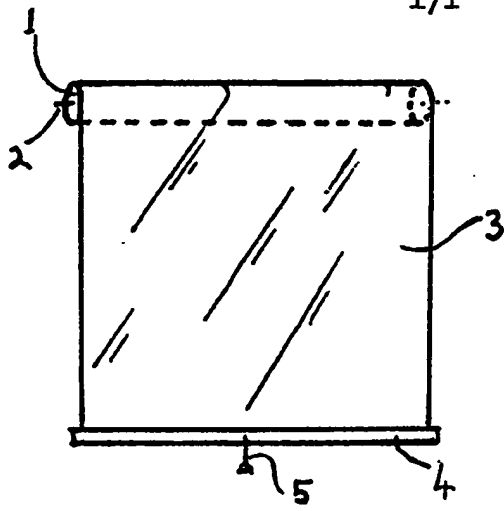


Fig A

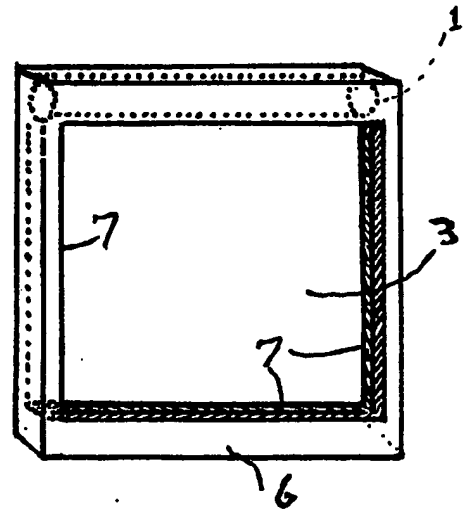


Fig B

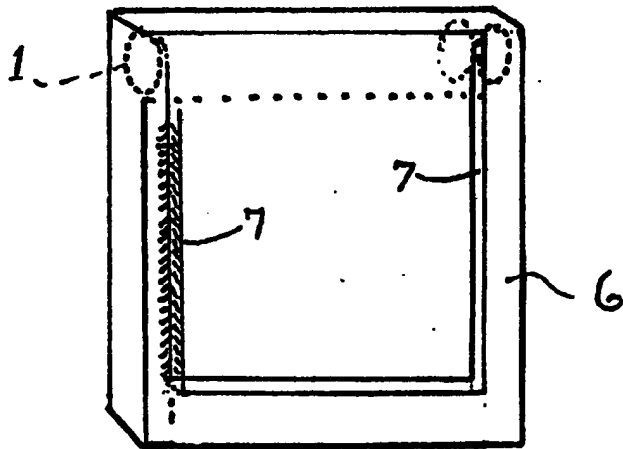
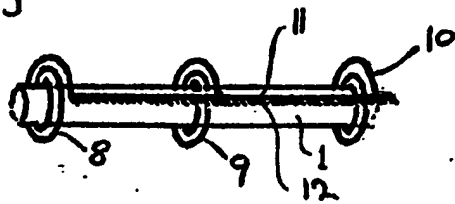


Fig C

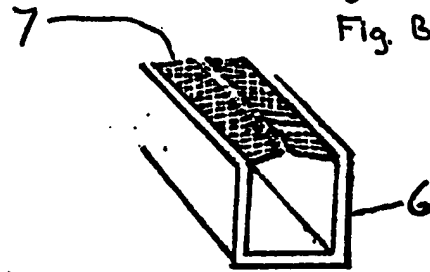


Fig D

SPECIFICATION

Insulating device

The present invention relates to an insulating device for windows, doors and the like wherein a flexible sheet of transparent or translucent film material is applied adjacent the glazed region of the window or door.

It is known to improve the insulation of glazed windows or doors by providing two spaced-apart glass panes fixed in a casing or frame so that the air trapped between the panes acts as an additional insulation and this so-called "double-glazing" considerably reduces heat losses. Such double-glazing with rigid glass panes located in especially designed and shaped housings or frames is particularly expensive and requires time and skill in installation.

It is an object of the invention to provide a device which is economic to produce and easy to install and which reduces heat losses and/or draughts for windows and/or doors.

According to the present invention a device for reducing heat losses and/or draughts of glazed regions of windows and/or doors, comprises a roller, means for locating the roller adjacent the glazed region of a door or window, at least one sheet of transparent or translucent flexible film material capable of being wound around said roller in the inoperative position of the device and extendable or removable therefrom in the operative position so as, in use, to extend adjacent the glazed area, and retention and/or sealing means adjacent or locatable adjacent the edges of the film material in the operative position so as to abut or engage the edges thereof and prevent or minimise the flow of air in such region.

It will be appreciated that the provision of the retention and/or sealing means adjacent the edges of the film material or "blind" provide the advantage of insulation and draught exclusion in a desirable manner. Furthermore, the provision of the "blind" of translucent or transparent material enables light to pass through the window and the insulation device and for the occupants to see therethrough.

It is envisaged that the retention and/or sealing means forming the draught exclusion means may comprise a track or guide means located or locatable at each side of the roller and along which the sheet of film material may be displaced into the operative position and vice versa. The track means will preferably each comprise a channel and be suitably shaped and formed of suitable material e.g. flexible nylon or other plastics material, as to facilitate passage of the sheet material and also as to seal and exclude or minimize draughts. It is possible that the side retention means may comprise strips of material securable to the edge of the window frame or door by suitable means e.g. screws or nails and have a hinged portion e.g. made of integral resilient portions of the material which may be of plastics in known manner, such that when the blind is to be displaced the clamping portion of the strips is

removed from the movement path of the sheet and, in the position of use, is returned to clamp the edge of the sheet either side thereof to reduce draughts and heat loss.

Any other suitable means may be provided for ensuring that in the operative position the space between the film material sheet and the adjacent window pane is closed or substantially closed to prevent heat losses.

In one embodiment of the device, the roller is mounted in a rectangular and hollow frame or box which is to be secured adjacent the glazed area in sealing manner therewith and the edges of the box have channels which are lined with draught exclusion means or the like, such as fibre bristles e.g. of nylon material which bristles allow the passage of the film material therethrough but which contact the film and act to restrict the passage of draught in the manner of known draught excluders.

The roller of the device may be suitably spring biased in known manner to permit ready rolling-up of the film material and such operations and devices are readily known from existing roller blinds as is the mountings and securing means therefor.

In a preferred embodiment of the invention, there is also provided at least one coil means surrounding said roller and into which coil the film of transparent material may be drawn upon rotation of the roller so as to thereby extend around the roller in the inoperative position. Said at least one coil acts as a storage or carrier means for the film material and prevents the surfaces thereof from overlying such and contacting adjacent rolls of the sheet material which would otherwise result in the surfaces of the film material becoming scratched and undesirable in appearance. Such coil means functions in the manner of a separation carrier spool used in photographic developing. Preferably, such coil retention means will be provided along the length of the roller and preferably three individual coils are provided — one at each end of the roller and one in the middle and, preferably, the coils will be of coiled wire. Preferably, the coil retaining means for the rolled film material will be of wire or plastics coil with the ends thereof interconnected by a cross bar guide means to provide a guide lip or surface at the inlet of the coils for the guidance of the film material. Preferably such cross bar guide means will be provided with a nylon bristle lining or the like to clean the sheet material entering the coils and also to act as an anti-static device.

It is considered desirable for two rollers each with sheet material to be provided — one sheet for use in daytime, possibly patterned and mainly transparent or translucent — and the second sheet for use at night being opaque.

The film material may be printed so as to resemble the appearance of net curtains, etc. The provision of the third blind may cause the device to act as "treble glazing."

The sheet retaining or draught exclusion means

provides an air tight or substantially air tight joint between the window and film material.

The invention will be described further, by way of example, with reference to the semi-schematic accompanying drawings, in which:—

Fig. A illustrates a roller with a sheet of transparent film material thereon and forming part of an insulating device;

Fig. B illustrates a housing in which the roller and sheet of Fig. A are to be located;

Fig. C illustrates a modified embodiment comprising a housing and thereabove a spacing and anti-scratch means in the form of three coils with anti-static bar interconnecting such to be located in the housing and shown surrounding the roller;

Fig. D is a section through a part of the edge of the housing showing nylon fibres forming the retention and/or sealing means.

In the embodiment illustrated in Figs. A, B and D, a roller 1 is provided mounted on an axle 2 and will be spring-biased in known manner (not shown) as with known roller blinds so as to be operable to roll a sheet of material therearound. A sheet of transparent (or translucent, if desired) flexible film material 3 is provided and may be rolled around the roller 1. A bottom rigid cross-bar 4 and pull cord 5 is provided for operation and displacement of the sheet material and roller. A hollow box-like housing 6 for retaining the sheet material and draught exclusion is illustrated in Fig. B (and Fig. C) in which the roller and sheet material are located and operable. The box 6 is securable by suitable means (not shown) against a window frame or the like and may be shaped and dimensioned and produced economically. The edge of the box has draught exclusion means in the form of a fine bristle lining 7 e.g. of nylon material, or other suitable retaining and draught excluding means, (not shown) which permit the passage of the sheet material into and out of the operative positions whilst preventing the flow or substantial flow of air through the space between the sheet material and the window pane or surrounding window frame (not shown). This draught exclusion means is illustrated schematically in Fig. D which comprises a fragmentary section through a side guide of the hollow frame and shows the bristle lining.

Suitable retaining means (not shown) e.g. studs or hooks, will be provided to maintain the sheet material in the operative position.

Fig. C illustrates a modified device including means for reducing any scratch effect on the transparent sheet material and such means comprises three spaced apart coils 8, 9 and 10 of wire material (or of plastics material, if suitable) and interconnected by a guide and anti-static device in the form of a cross bar 11 having bristle linings 12 thereon. These three coils 8, 9, 10 surround the roller bar and are mounted in the box 6 and retained against movement. The roller 1 extends through the centre of the coils 8, 9, 10 and is operable therein and connected to the sheet

material which is collable on said coil upon rotation of the roller. The sheet material 3 may extend to wrap around the roller bar 1 itself or a sheet of other material, perhaps of less expensive nature, may be provided between the roller 1 and

film material 3 to wrap around the roller bar leaving the transparent sheet material coiled around the coils 8, 9, 10 and not in contact with the adjacent surfaces of the sheet material. The coils 8, 9, 10 will be shaped and dimensioned and of such material as to reduce any damaging effect on the sheet material. The anti-static device comprising fibre members 12 cleans the sheet material of dust and minimizes any static effect.

The device may be referred to as "A thermal blind" and in effect is a roller window blind which is fitted to be air-tight. When the sheet material 3 is rolled on or around the roller 1 it may be done incorporating a roller coil (Fig. C) to avoid the scratching effect produced by contact of adjacent surfaces of the sheet material. The roller 1 is then placed and secured in the top of the box frame housing 6. The whole frame is fitted to an existing window and frame. When the "blind" is operated by pulling down on cord 5, the sheet 3 is contained at the sides by the lined frame D. When the rigidity 4 bar is secured at the base of the frame; by virtue of the materials involved and their arrangement, a "thermal brake" is contained between the windows and the blind. The sheet material when retracted upwards, passes through another bristle surface thereby cleaning the surfaces. An anti-static material may also be incorporated at the point prior to the film meeting the roller mechanism.

The film surface may be printed with the effect of net curtains etc. An arrangement for the device might be possible wherein two rollers and sheet materials are produced so that a second opaque blind can be incorporated into the unit if so desired. A suitable hook or like means may replace a retaining pawl (not shown) to retain the blind in the operative position. Stud holes may be provided in the bottom hole to alternatively secure the rigid bar.

It is envisaged that in an alternative concept according to the invention the earlier mentioned "retention and/or sealing means" may be omitted and said "at least one coil means" is incorporated.

Thus also according to a modified embodiment according to the invention a device for reducing heat losses and/or draughts of glazed regions of windows and/or doors, comprises a roller, means for locating the roller adjacent the glazed region of a door or window, at least one sheet of transparent or translucent flexible film material capable of being wound around said roller in the inoperative position of the device and extendable or removable therefrom in the operative position, so as, in use, to extend adjacent the glazed area, and at least one coil means surrounding said roller and into which coil means the transparent material may be drawn upon rotation of the roller so as to thereby extend

around the roller in the operative position.

CLAIMS

1. A device for reducing heat losses and/or draughts of glazed regions of windows and/or doors, comprises a roller, means for locating the roller adjacent the glazed region of a door or window, at least one sheet of transparent or translucent flexible film material capable of being wound around said roller in the inoperative position of the device and extendable or removable therefrom in the operative position so as, in use, to extend adjacent the glazed area, and retention and/or sealing means adjacent or locatable adjacent the edges of the film material in the operative position so as to abut or engage the edges thereof and prevent or minimise the flow of air in such region.

2. A device as claimed in claim 1, in which the retention and/or sealing means forming the draught exclusion means comprise a track or guide means located or locatable at each side of the roller and along which the sheet of film material is displaceable into the operative position and vice versa.

3. A device as claimed in claim 2, in which track means are provided which each comprise a channel suitably shaped and formed of suitable material so as to facilitate passage of the sheet material and also so as to seal and exclude or minimise draughts.

4. A device as claimed in claim 2, in which side retention means are provided and comprise strips of material securable to the edge of the window frame or door by suitable means and have a hinged portion such that when the blind is to be displaced, the clamping portion of the strips is removed from the movement path of the sheet and, in the position of use, is returned to clamp the edge of the sheet either side thereof to reduce draughts and heat loss.

5. A device as claimed in claim 1, in which the roller is mounted in a rectangular and hollow frame or box which is to be secured adjacent the glazed area in sealing manner therewith and the edges of the box have channels which are lined with draught exclusion means which allow the

passage of the film material therepast but which contact the film and act to restrict the passage of air to cause a draught.

6. A device as claimed in any of claims 1 to 5, in which there is also provided at least one coil means surrounding said roller and into which coil the film of transparent material may be drawn upon rotation of the roller so as to thereby extend around the roller in the inoperative position such that said at least one coil acts as a storage or carrier means for the film material and prevents the surfaces thereof from overlying such and contacting adjacent rolls of the sheet material which would otherwise result in the surfaces of the film material becoming scratched and undesirable in appearance.

7. A device as claimed in claim 6, in which a plurality of coil retention means are provided spaced along the length of the roller — at least one at each end of the roller and one in an intermediate region.

8. A device as claimed in claim 7, in which the coils are of coiled wire.

9. A device as claimed in claim 6, 7 or 8 in which coil retaining means for the rolled film material is a wire or plastics coil with the ends thereof interconnected by a cross bar guide means to provide a guide lip or surface at the inlet of the coils for the guidance of the film material.

10. A device as claimed in claim 9, in which the cross bar guide means is provided with a nylon bristle lining or the like to clean the sheet material entering the coils and also to act as an anti-static device.

11. A device as claimed in any of claims 1 to 10, in which two rollers each carrying sheet material are provided — one sheet for use in daytime, possibly patterned and mainly transparent or translucent — and the second sheet for use at night being opaque.

12. A device as claimed in claim 11, in which a third blind is provided to permit the device to act as "treble glazing."

13. A device substantially as herein described with reference to and as illustrated in the accompanying drawings.